WHAT IS CLAIMED IS:

1. A method of manufacturing a fuel cell by fixing a polymer electrolyte film to a frame, said method comprising the steps of:

causing the polymer electrolyte film to have a water content of not greater than 4, which is expressed as a molar fraction of H_2O; and

bonding the polymer electrolyte film to the frame with an adhesive.

2. A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive having a modulus of elasticity of not greater than 10 MPa after cure.

3. A method in accordance with claim 2, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive has a durometer A hardness of not greater than 90 after cure.

4. A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive has a durometer A hardness of not greater than 90 after cure.

5. A method in accordance with claim 1, wherein the step

of bonding the polymer electrolyte film comprises providing the frame being a pair of separators that are arranged across a pair of gas diffusion electrodes, between which the polymer electrolyte film is interposed.

6. A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive being a modified rubber adhesive comprising a mixture of epoxy resin and modified silicone.

7. A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive including resin beads of a predetermined diameter.

8. A method of manufacturing a fuel cell by fixing a polymer electrolyte film to a frame, said method comprising the steps of:

providing an adhesive having a modulus of elasticity of not greater than 10 MPa after cure; and

bonding the polymer electrolyte film to the frame with the adhesive.

9. A method in accordance with claim 8, wherein the step of providing the adhesive comprises providing the adhesive has a durometer A hardness of not greater than 90 after cure.

10. A method in accordance with claim 8, wherein the step of bonding the polymer electrolyte film comprises providing the frame being a pair of separators that are arranged across a pair of gas diffusion electrodes, between which the polymer electrolyte film is interposed.

11. A method in accordance with claim 8, wherein the step of providing the adhesive comprises providing the adhesive being a modified rubber adhesive comprising a mixture of epoxy resin and modified silicone.

12. A method in accordance with claim 8, wherein the adhesive includes resin beads of a predetermined diameter.

13. A method of manufacturing a fuel cell by fixing a polymer electrolyte film to a frame, said method comprising the steps of:

providing an adhesive having a durometer A hardness of not greater than 90 after cure; and

bonding the polymer electrolyte film to the frame with the adhesive.

14. A method in accordance with claim 13, wherein the step of bonding the polymer electrolyte film comprises providing the frame being a pair of separators that are arranged across a pair of gas diffusion electrodes, between which the

polymer electrolyte film is interposed.

15. A method in accordance with claim 13, wherein the step of providing the adhesive comprises providing the adhesive being a modified rubber adhesive comprising a mixture of epoxy resin and modified silicone.

16. A method in accordance with claim 13, wherein the step of providing the adhesive comprises providing the adhesive including resin beads of a predetermined diameter.

17. A fuel cell, comprising:

a frame; and

a polymer electrolyte film that has a water content of not greater than 4, which is expressed as a molar fraction of H_2O, and is bonded to the frame with an adhesive.

18. A fuel cell, comprising:

a polymer electrolyte film;

a frame; and

an adhesive that is used to bond the polymer electrolyte film to the frame and has a modulus of elasticity of not greater than 10 MPa after cure.

19. A fuel cell, comprising:

a polymer electrolyte film;

a frame; and

an adhesive that is used to bond the polymer electrolyte film to the frame and has a durometer A hardness of not greater than 90 after cure.